

# Taxonomic questions within the genus *Brachystelma*: a few examples

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Brachystelmas belong to the large milkweed family, or Asclepiadaceae, which also includes the well-known *Stapelia*s or "aasblomme" (carrion flowers).

The world population within the Brachystelmas presently consists of around 100 taxa. With more field work, the list will undoubtedly grow, whilst with further taxonomic studies, the number will probably shrink.

In South Africa, which boasts about 70 of the taxa, most Brachystelmas occur in the better watered eastern regions which enjoy a summer rainfall. Only a few species are found growing over vast areas in the drier grasslands and Kalahari regions. In the winter rainfall region around Cape Town, only two species are found.

A *Brachystelma* in my opinion is a herbaceous perennial plant having an underground tuber which is usually disc-shaped or obconical, tastes like a raw potato and has deciduous stems which bear sets of leaves in an opposite arrangement. Flowers are borne on the stems and are separated taxonomically from the closely related genus *Ceropegia* in having a far less well developed floral tube.

Of course there are overlapping taxa within these closely related genera. This is what happens when a man-made system tries to compartmentalise groups of plants for purposes of convenience. A good example here is that of *Ceropegia pygmaea* which grows outside Pretoria and has a floral tube of 50 mm or longer. *Brachystelma stenophyllum* also grows in the same area, looks vegetatively very similar, has the same thin leaves, a floral (corolla) tube of only around 10 - 15 mm but has a staminal column which is almost identical to that of *C. pygmaea* as well as a similar outer corona appendage forming a raised bowl.

Like the foul-smelling *Stapeliads*, Brachystelmas are visited by various types and sizes of flies which are crucial for the pollination of the

flowers. The widely distributed *B. barberae*, when flowering, will definitely not go unnoticed. Its flowers smell like rotten meat and a plant or two flowering in a hothouse will keep the owner at bay for a day or so.

The mechanism for pollination is briefly as follows: the fly is attracted by colour and smell to the flower. The fly's proboscis (mouth) searches for nectar from the nectar pouch and in the process a set of pollinia becomes attached to its mouth parts. On the one side of the pollinium is a rail. When the fly withdraws its proboscis, the rail slides into the groove of the gynaecium. Fertilisation then takes place with two seed follicles probably developing shortly afterwards.

For most species, the staminal column often is the only reasonably constant character which can be used to classify both *Ceropegias* and Brachystelmas. The staminal column consists of the gynaecium and the androecium as well as outgrowths from the sides of the column, often called the outer and inner corona. The arrangement and shape of these appendages have helped to classify the various taxa. There is also the nectar pouch below each female groove. The sets of petals, pollinia, outer and inner corona appendages as well as nectar pouches number five, although the odd flower may have as few as four of these sets to as many as eight or nine in freak flowers.

One group of Brachystelmas grows in the cool mist-belt of the eastern Transvaal and Natal. This is called, for simplicity, the *coddii* group. The plants in this group have one to few thin procumbent stems 10 - 20 cm long with small heart- to oval-shaped leaves which decrease in size towards the tips. One or two flowers are borne at the axil of each pair of leaves. The problem with this group is that each hilltop has plants which vary slightly from those which grow on the next hilltop. It thus becomes difficult to identify plants at the taxon level.

Around Haenertsburg near Tzaneen, the flowers of plants have

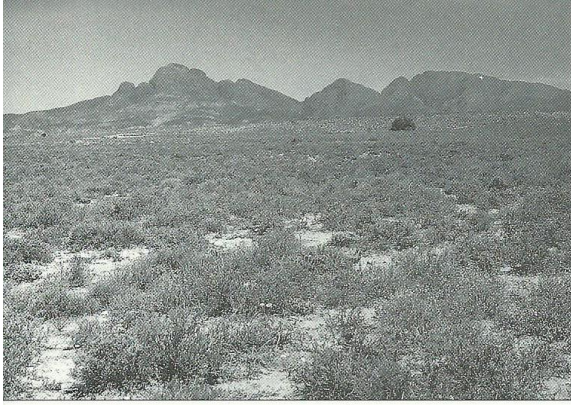
circular markings as well as a well-formed cup-shaped flower. A few kilometres south-east at The Downs, plants have flowers which can have circular markings or none at all, are more saucer-shaped and look very similar to *B. bruceae* which is found very near to this area. Further south near Ngome (about 400 km) populations of plants can be seen with the circular patterns on the corolla and which look like *B. coddii* with a saucer-shaped corolla. 150 km west of Ngome, near Dirkiesdorp, another species, *B. remotum* is found growing in the same shallow soils in the mist-belt, but it has hairy flowers. That was until I obtained a few plants, and one of the plants had flowers without hairs looking almost identical to those of a *B. coddii* from Haenertsburg.

The *B. bruceae* group which is very closely related to *B. coddii* also has populations having hairy and non-hairy flowers as well as populations with yellow flowers.

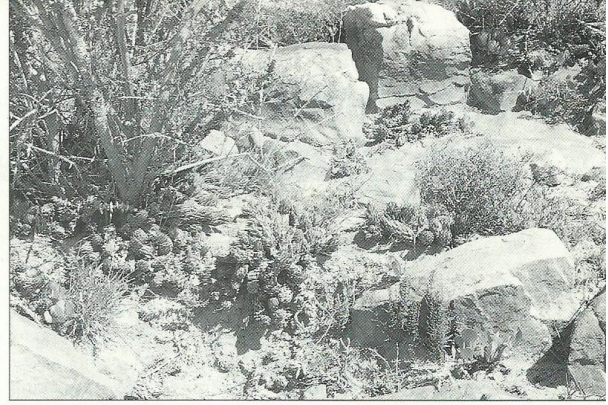
The *B. circinatum* group which is distributed all over South Africa gives the same problems. Here, the flowers form delicate cages but the usual stable character, the staminal column, can vary by having longer or shorter outer corona appendages, small hairs on the appendages as well as having a vast degree of different vegetative forms - from one obtained in Zimbabwe, which is dwarf and decumbent, to a robust form found on my plot outside Pretoria.

It is hoped that with these few examples and illustrations, the problems with the classification of this genus can be appreciated. It has become apparent to me that there is no substitute for good thorough field work as the main foundation stone for working out what groups of plants are merely ecotypes and forms of one species and which taxa have sufficiently distinguishing characters to be able to stand alone.

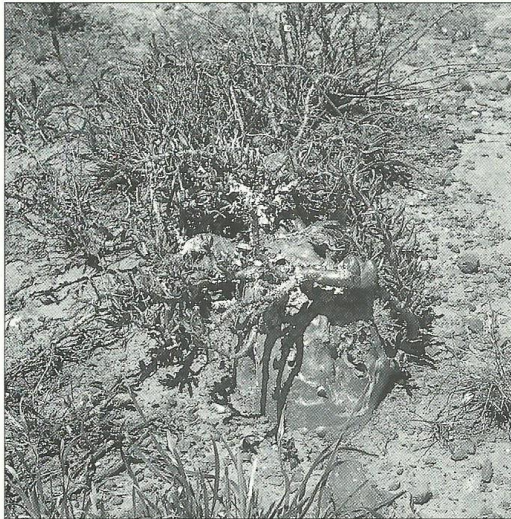
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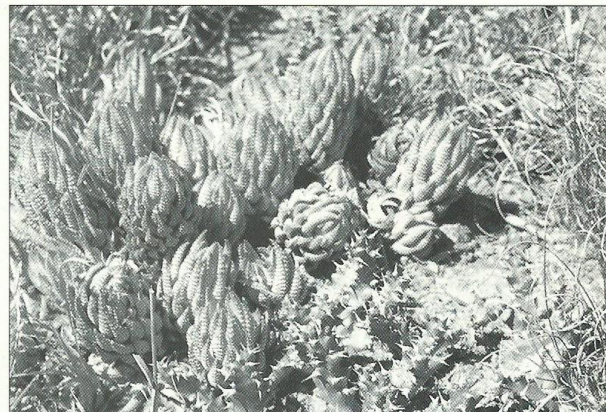
The Springbok Flats, an extremely interesting but over-exploited area featuring many rare and desirable dwarf succulents.



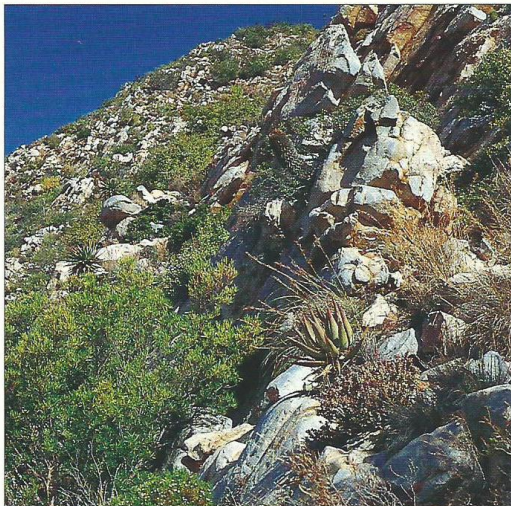
*Haworthia coarctata* subsp. *adelaidensis* growing with *Euphorbia squarrosa* on Ecça shale north-east of Grahamstown on the transitional belt between Karroid scrub and dry Eastern Cape savanna.



Showing its exposed, large and old weather-polished caudex, *Pachypodium bispinosum* survives its harsh habitat on shaley soil on a hill slope at the southern entrance to the Ecça pass, north of Grahamstown.



*Haworthia coarctata* subsp. *coarctata* on Witteberg quartzite boulders of low hills east of Alicedale. *Haworthias* of the subgenus *Hexangulares* often prefer such warm northern aspects and in well-drained situations as illustrated.



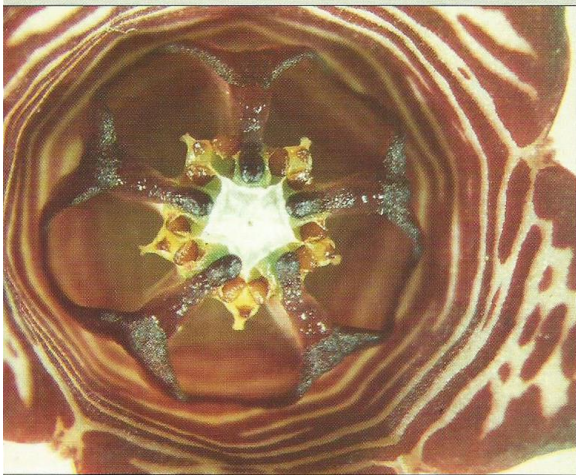
High northern hill slopes of Witteberg-quartzite near Steytleville with *Aloe ferox* and *Euphorbia horrida* var. *striata* the most conspicuous succulents.



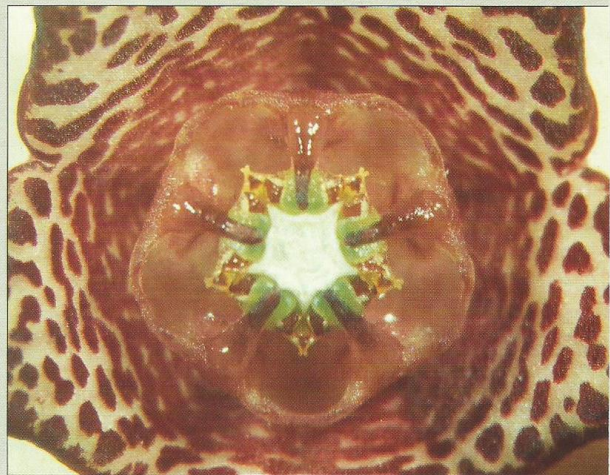
*Faucaria tigrina*, a rare and beautiful endemic 'vygie' of the eastern Cape. *F. tigrina* is known only from two small colonies adjacent to and almost inside Grahamstown. It is threatened by expansion of the city, although no immediate threat is in progress.



*Brachystelma bruceae* subsp. *bruceae* from MacMac Pools.



*Brachystelma coddii* from Iron Crown, Haenertsburg.



A *Brachystelma coddii*-type flower from about 400 km south near Ngome.  
Similar *Brachystelma* flowers within the *B. coddii* group. Note the similar coronas.